

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF NORTH CAROLINA
CHARLOTTE DIVISION**

Kanautica Zayre-Brown,

Plaintiff,

v.

The North Carolina Department of Public
Safety, et al.,

Defendants.

CIVIL ACTION

Case No. 3:22-CV-00191-MOC-DCK

**EXPERT REBUTTAL REPORT OF
ARMAND H. MATHENY AN TOMM MARIA, MD, PhD, FAAP, HEC-C**

I, Armand H. Matheny Antomm aria, hereby declare and state as follows:

1. I have been retained by counsel for Plaintiff as a rebuttal expert in connection with the above-captioned litigation.

2. I have actual knowledge of the matters stated herein.

3. In preparing this declaration, I reviewed the expert reports by Randi C. Ettner, PhD, and Fan Li, PhD. Dr. Ettner's report contains copies of the Division Transgender Accommodations Review Committee's Position Statement: Gender Reassignment Surgery and Case Summary: Offender #0618705, which I also reviewed. In addition to these expert reports and the materials cited herein, I have also relied on my years of research and other experience, as set out in my curriculum vitae (Exhibit A), in forming my opinions. The materials I have relied upon in preparing this expert rebuttal

report are the same types of materials that experts in my fields of study regularly rely upon when forming opinions on subjects. I may wish to supplement these opinions or the bases for them due to new scientific research or publications, or in response to statements and issues that may arise in my area of expertise.

OVERVIEW

4. I am a pediatrician and bioethicist with extensive clinical and research experience. I am the author of 42 peer-reviewed articles, which have been published in high-impact journals including the *Journal of the American Medical Association* and *Annals of Internal Medicine*, and I direct the Ethics Center at Cincinnati Children's Hospital Medical Center. This expert rebuttal report sets forth my reasons for my disagreement with and my concerns about the conclusions Dr. Li reaches in her expert report.

5. Dr. Ettner explains that gender-affirming genital surgery is a medically necessary treatment for Mrs. Zayre-Brown (Paragraphs 132-137). Dr. Li claims that evidence cited by Dr. Ettner and by the World Professional Association for Transgender Health (WPATH) does not provide reasonable support for Dr. Ettner's and WPATH's conclusions (Page 4).

6. Dr. Li mischaracterizes the level of evidence necessary for making treatment recommendations. Treatment recommendations are not required to be based on randomized controlled trials. Widely accepted methods for developing clinical practice guidelines state that treatment recommendations may be based on "low" or "very low"

quality evidence.¹ In fact, a significant portion of treatment recommendations across the spectrum of medical interventions rely on this level of evidence. Dr. Li also fails to acknowledge the constraints on conducting randomized controlled trials for many medical treatments, including gender-affirming genital surgery and other forms of gender-affirming medical care.

BACKGROUND AND QUALIFICATIONS

7. I am the Director of the Ethics Center, the Lee Ault Carter Chair of Pediatric Ethics, and an Attending Physician in the Division of Hospital Medicine at Cincinnati Children's Hospital Medical Center ("Cincinnati Children's"). I am also a Professor in the Departments of Pediatrics and Surgery at the University of Cincinnati College of Medicine.

8. I received my medical degree from Washington University School of Medicine in St. Louis, Missouri in 2000. I received my PhD in Religious Ethics from The University of Chicago Divinity School in 2000. I completed my pediatrics residency at the University of Utah in 2003.

9. I have been licensed to practice medicine since 2001 and am currently licensed to practice medicine in Ohio. I have been Board Certified in General Pediatrics since 2004 and in Pediatric Hospital Medicine since the inception of this certification in 2019. I have been certified as a Healthcare Ethics Consultant since the inception of this certification in 2019.

¹ As explained below, "low" and "very low" are relative terms used to describe two of the four levels of evidence. They should not be misinterpreted as meaning "poor or inadequate" evidence.

10. I have extensive experience as a pediatrician and as a bioethicist. I have been in clinical practice since 2003 and 30% of my current effort is dedicated to caring for hospitalized patients. I provide evidence-based medical care to my patients and teach evidence-based medicine to the trainees that I supervise. This includes using clinical practice guidelines and teaching trainees how they are developed. I was Chair of the Ethics Committee at Primary Children's Medical Center in Salt Lake City, Utah from 2005 to 2012 and have been Director of the Ethics Center at Cincinnati Children's since 2012. I regularly consult on the care of patients in the Transgender Health Clinic at Cincinnati Children's and participate in the Clinic's monthly multidisciplinary team meetings. I remain current with the medical and bioethics literature regarding the treatment of individuals with gender dysphoria. I chair Cincinnati Children's Fetal Care Center's Oversight Committee, which provides the Center recommendations on the use of innovative treatments and experimental interventions.

11. I am a member of the American Academy of Pediatrics (AAP), the American Society for Bioethics and Humanities (ASBH), the Association of Bioethics Program Directors, and the Society for Pediatric Research. I was a member of the AAP Committee on Bioethics from 2005 to 2011. I have also served as a member of the ASBH's Clinical Ethics Consultation Affairs Committee from 2009 to 2014 and currently serve on its Healthcare Ethics Consultant Certification Commission.

12. I am the author of 42 peer-reviewed journal articles, 11 non-peer-reviewed journal articles, 6 book chapters, and 28 commentaries. My peer-reviewed journal articles have been published in high-impact journals, including the *Journal of the American*

Medical Association and *Annals of Internal Medicine*. I am also an author of 17 policy statements and technical reports, including 4 as lead author, by the AAP.

13. I am a member of the Executive Editorial Board and the Associate Editor for Ethics Rounds of *Pediatrics*. I am an active peer reviewer for many medical journals, including the *American Journal of Bioethics* and the *Journal of Pediatrics*. I also review abstracts for meetings of professional organizations, including the Pediatric Academic Societies and ASBH. I was previously a member of the editorial boards of the *Journal of Clinical Ethics* and the *Journal of Medical Humanities*.

14. In summary, as an academic pediatric hospitalist, I practice and teach evidence-based medicine, including the use and development of clinical practice guidelines. As a bioethicist, I help patients, parents, and health care providers address ethical dilemmas and resolve ethical conflicts. This involves analyzing the evidence and reasons supporting different treatment options.

15. I have previously testified at deposition and trial in *Brandt v. Rutledge*, United States District Court, Eastern District of Arkansas, Case No. 5:21-CV-00450-JM-1; and at deposition and trial in *Dekker v. Weida*, United States District Court, Northern District of Florida, Case No. 4:22-cv-00325-RH-MAF. I have also previously testified in the preliminary injunction phase in *Doe v. Abbott*, District Court of Travis County, Texas 353rd Judicial District, Case No. D-1-GN-22-000977; and in the preliminary injunction phase and at deposition in *Boe v. Marshall*, United States District Court, Northern District of Alabama, No. 22-cv-184.

16. I am being compensated at a rate of \$400 per hour for my work in this matter. My compensation does not depend on the outcome of this litigation, the opinions I express, or the testimony I provide.

DR. LI'S EXPERT REPORT

17. Dr. Li contends that the evidence cited by Dr. Ettner and WPATH does not provide reasonable support for Dr. Ettner's and WPATH's conclusions regarding the effectiveness of gender-affirming medical care to treat gender dysphoria. What Dr. Li considers reasonable is clarified by her statement that "Among the dozens of studies reviewed, there is not a single randomized controlled trial. Most of the studies cited in support of those assertions are of low quality in terms of study design and statistical methodology (Dr. Fan Li Expert Report ("Li Report") at 4; see also *id.* at 25)." A substantial portion of Dr. Li's report provides her assessment of the research cited by Dr. Ettner and WPATH (Li Report at 11-24) and she frequently repeats her claims about reasonable support, randomized controlled trials, and "low" quality evidence (Li Report at 12, 14, 15, 16, 17, 18, 19, 21, 22, and 24). Dr. Li's characterization of the studies being subject to confounding, selection, nonresponse, and recall bias is part of her justification for labeling them as "low" quality.

18. The primary problem with Dr. Li's opinions is not her characterization of individual studies. While not conceding Dr. Li's characterization of each individual study, there are few randomized controlled trials of gender-affirming medical care and the body of evidence is currently appropriately characterized as "low" or "very low" quality. The primary problem with Dr. Li's opinions is that the standard that she relies on for

determining whether Dr. Ettner's and WPATH's conclusions are reasonable is inappropriately high. Recommendations in clinical practice guidelines are not based solely on the quality of the evidence, or on "high" quality evidence. Recommendations may appropriately be justified by observational studies. While observational studies are characterized as "low" quality evidence, "low" is a relative term describing the different levels of evidence and should not be misinterpreted as meaning "poor or inadequate." While a statistician may hold randomized controlled trials up as the "gold standard" of for evidence (Li Report at 8), clinicians must make decisions based on the best, currently available evidence, which includes other types of studies. They cannot tell their patients to come back later after randomized controlled trials have been conducted. Furthermore, there are sound reasons why randomized controlled trials may not be available or, if available, may not provide "high" quality evidence in particular circumstances. In practice, only a minority of clinical practice guideline recommendations are based on "high" quality evidence. The lack of randomized controlled trials and reliance on "low" quality evidence does not mean that there is not reasonable support for a clinical practice guideline recommendation or that a treatment is not medically necessary.

CLINICAL PRACTICE GUIDELINES

19. Given the breadth of the existing medical literature and its ever-increasing size, medical professionals may have difficulty finding useful information to inform

decision-making and treatment recommendations. The optimal resource, if one is available, is a clinical practice guideline.²

20. Medical professional organizations develop clinical practice guidelines to provide clinicians with helpful, evidence-based recommendations and improve patient care and outcomes. Clinical practice guidelines are developed using systematic reviews of the literature—systematic processes to select and review relevant scientific evidence. Systematic reviews evaluate the evidence, but do not make treatment recommendations.³ Clinical practice guidelines both evaluate the evidence and make recommendations.⁴ One widely used method for rating the quality of evidence and the strength of recommendations is the Grades of Recommendation Assessment, Development and Evaluation (GRADE) system.⁵

Quality of the Evidence

21. In clinical practice guidelines, the quality of evidence has been defined as “the extent of our confidence that the estimates of an effect are adequate to support a particular decision or recommendation.”⁶ Quality of evidence is based on five factors: risk

² Guyatt G, Rennie D, Meade MO, et al., eds. *Users' Guide to the Medical Literature: A Manual for Evidence-Based Clinical Practice*. 3rd ed. McGraw Hill Education; 2015.

³ National Heart, Lung, and Blood Institute. About systematic evidence reviews and clinical practice guidelines. Accessed July 30, 2023. Available at <https://www.nhlbi.nih.gov/node/80397>.

⁴ Qaseem A, Kansagara D, Lin JS, et al. The development of clinical guidelines and guidance statements by the Clinical Guidelines Committee of the American College of Physicians: Update of methods. *Ann Intern Med*. 2019;170(12):863-870.

⁵ Atkins D, Best D, Briss PA, et al. Grading quality of evidence and strength of recommendations. *BMJ*. 2004;328(7454):1490; Guyatt G, Oxman AD, Akl EA, et al. GRADE guidelines: 1. Introduction-GRADE evidence profiles and summary of findings tables. *J Clin Epidemiol*. 2011;64(4):383-394.

⁶ Balshem H, Helfand M, Schunemann HJ, et al. GRADE guidelines: 3. Rating the quality of evidence. *J Clin Epidemiol*. 2011;64(4):403.

of bias, inconsistency, indirectness, imprecision, and publication bias. Dr. Li focuses on the risk of bias, including confounding, selection, nonresponse, and recall bias, as well as the inconsistency of results. The GRADE system distinguishes four levels of evidence: “high,” “moderate,” “low,” and “very low.” These levels are relative to one another and “low” does not necessarily mean “poor or inadequate.” As discussed below, a recommendation in a clinical practice guideline may be based on “low,” or “very low” quality evidence, not just “high” or “moderate” quality evidence.⁷

22. With respect to study design, randomized trials are initially assigned to the “high” category.⁸ In a randomized trial, participants are randomly assigned to a treatment or a comparison group. As Dr. Li describes (Li Report at 8), the major benefit of a randomized trial is that it decreases the likelihood that any differences in the outcomes between the groups is the result of baseline differences between the groups rather than the result of the intervention.⁹ In addition to randomization, randomized controlled trials also frequently use “blinding” or “masking.” In a “double-masked” trial, neither the investigators nor the participants know whether the participant was randomized to the treatment or comparison group. Masking reduces the effect of individuals’ biases on the

⁷ Atkins D, Best D, Briss PA, et al. Grading quality of evidence and strength of recommendations. *BMJ*. 2004;328(7454):1490; Guyatt G, Oxman AD, Akl EA, et al. GRADE guidelines: 1. Introduction-GRADE evidence profiles and summary of findings tables. *J Clin Epidemiol*. 2011;64(4):383-394. The guidelines initially defined the quality of the evidence based on four factors; a fifth was added in a subsequent revision.

⁸ Atkins D, Best D, Briss PA, et al. Grading quality of evidence and strength of recommendations. *BMJ*. 2004;328(7454):1490; Balshem H, Helfand M, Schunemann HJ, et al. GRADE guidelines: 3. Rating the quality of evidence. *J Clin Epidemiol*. 2011;64(4):401-406.

⁹ See also Browner WS, Newman TB, Cummings SR, et al. *Designing Clinical Research*. 5th ed. Wolters Kluwer; 2023.

ascertainment of the outcomes. For example, if investigators were biased in favor of the treatment and knew which participants were randomized to the treatment group, they might unconsciously report more favorable outcomes for them.¹⁰ While randomized controlled trials are initially assigned to the “high” category, their final rating may be lowered based on the aforementioned factors.¹¹

23. By comparison, observational studies are initially assigned to the “low” category.¹² Observational studies include cross-sectional and longitudinal studies. In cross-sectional studies, investigators collect data at a single point in time. Cross-sectional design permits investigators to examine potential associations between factors, but it cannot prove one factor caused the other. In longitudinal studies, researchers follow individuals over time, making continuous or repeated measures.¹³ Observational studies’ final rating may be increased if any of several factors, e.g., a large effect size, is present.¹⁴

24. The labels “high” and “low” quality evidence can be misleading if interpreted in the colloquial sense of “excellent or necessary” or “poor or inadequate,” respectively. While randomized controlled trials are described in the medical literature as “high” quality

¹⁰ Browner WS, Newman TB, Cummings SR, et al. *Designing Clinical Research*. 5th ed. Wolters Kluwer; 2023.

¹¹ Atkins D, Best D, Briss PA, et al. Grading quality of evidence and strength of recommendations. *BMJ*. 2004;328(7454):1490; Balshem H, Helfand M, Schunemann HJ, et al. GRADE guidelines: 3. Rating the quality of evidence. *J Clin Epidemiol*. 2011;64(4):401-406.

¹² Atkins D, Best D, Briss PA, et al. Grading quality of evidence and strength of recommendations. *BMJ*. 2004;328(7454):1490; Balshem H, Helfand M, Schunemann HJ, et al. GRADE guidelines: 3. Rating the quality of evidence. *J Clin Epidemiol*. 2011;64(4):401-406.

¹³ Browner WS, Newman TB, Cummings SR, et al. *Designing Clinical Research*. 5th ed. Wolters Kluwer; 2023.

¹⁴ Atkins D, Best D, Briss PA, et al. Grading quality of evidence and strength of recommendations. *BMJ*. 2004;328(7454):1490; Balshem H, Helfand M, Schunemann HJ, et al. GRADE guidelines: 3. Rating the quality of evidence. *J Clin Epidemiol*. 2011;64(4):401-406.

evidence and observational studies as “low” quality evidence, as described below, “low” quality evidence can be sufficient to justify treatment recommendations. Indeed, clinical practice guidelines regularly rely on “low” quality evidence. A trial or study having methodological limitations does not mean that it is irrelevant.

25. In some contexts, randomized controlled trials may be unavailable, may not be ethical or feasible, or may have intrinsic methodological limitations. There are significant barriers to randomized controlled trials, including their high cost and the lack of funding, the complexity of regulations and trial procedures, and difficulties recruiting sufficient participants.¹⁵ Randomized controlled trials, therefore, are less common than observational studies and may be unavailable for some treatments. Systematic reviews typically find “low” or “very low”-quality evidence for most medical interventions. Padhraig S. Fleming and colleagues conducted a review of systematic reviews published on the Cochrane Database of Systematic Reviews between January 1, 2013, and June 30, 2014. They focused on those that incorporated the GRADE approach and examined the quality of evidence for the first listed primary outcome. Of the 608 reviews, 82 (13.5%) reported “high,” 197 (30.8%) “moderate,” 193 (31.7%) “low,” and 126 (24%) “very low”-

¹⁵ Duley L, Antman K, Arena J, et al. Specific barriers to the conduct of randomized trials. *Clin Trials*. 2008;5(1):40-48; Bothwell LE, Greene JA, Podolsky SH, Jones DS. Assessing the gold standard—Lessons from the history of RCTs. *N Engl J Med*. 2016;374(22):2175-2181.

quality evidence.¹⁶ In a subsequent study, a related group of authors found that updated reviews did not consistently demonstrate an improvement in the quality of the evidence.¹⁷

26. At times, it may be unethical to conduct randomized trials. For randomized trials to be ethical, there must be clinical equipoise. Clinical equipoise is uncertainty within the scientific community about whether the intervention or the control is more efficacious. If clinical equipoise does not exist, it is unethical to knowingly expose trial participants to an inferior intervention or control. Trials must also be feasible: it would also be unethical to expose individuals to the risks of trial participation without the benefit of the trial generating generalizable knowledge. A randomized trial that is unlikely to find enough people to participate because they believe they might be randomized to an inferior intervention, for example, would be unethical because it could not produce generalizable knowledge due to an inadequate sample size.¹⁸

27. Even if randomized controlled trials can be conducted ethically, they may not provide “high” quality of evidence due to intrinsic design limitations. For example, if participants enrolled but were dissatisfied with the group to which they were randomized, they might seek treatment outside of the trial or not follow up. This crossover or loss to

¹⁶ Fleming PS, Koletsi D, Ioannidis JP, Pandis N. High quality of the evidence for medical and other health-related interventions was uncommon in Cochrane systematic reviews. *J Clin Epidemiol.* 2016;78:34-42. *See also* Howick J, Koletsi D, Ioannidis JPA, et al. Most healthcare interventions tested in Cochrane Reviews are not effective according to high quality evidence: A systematic review and meta-analysis. *J Clin Epidemiol.* 2022;148:160-169, which found that only 10.1% of interventions (158 of 1,567) had “high” quality evidence supporting their benefits.

¹⁷ Howick J, Koletsi D, Pandis N, et al. The quality of evidence for medical interventions does not improve or worsen: A metaepidemiological study of Cochrane reviews. *J Clin Epidemiol.* 2020;126:154-159.

¹⁸ Emanuel EJ, Wendler D, Grady C. What makes clinical research ethical? *JAMA.* 2000;283(20):2701-2711.

follow-up could negatively affect the trial. Surgical trials face additional issues: it may be difficult to control for the learning curve (changes in outcomes as a surgeon gains experience with a technique), different surgeon's skill levels, and differences or changes in the surgical technique.¹⁹

28. Observational studies are especially important when randomized controlled trials are unavailable, are not ethical or feasible, or have intrinsic methodological limitations.²⁰

Strength of Recommendations

29. When making recommendations, the authors of guidelines consider a variety of factors; the quality of the evidence is only one factor considered in making recommendations. Other considerations include the balance between desirable and undesirable outcomes, confidence and variability in patients' values and preferences, and resource use.²¹ The GRADE system distinguishes "strong" and "weak" recommendations; "guideline authors make a strong recommendation when they believe that all or almost all informed people would make the recommended choice" and a "weak" recommendation when most would but an appreciable number would not. GRADE acknowledges that "weak" recommendations can be confused with weak evidence or misinterpreted as

¹⁹ Love JW. Drugs and operations. Some important differences. *JAMA*. 1975;232(1):37-38; Gelijns AC, Ascheim DD, Parides MK, Kent KC, Moskowitz AJ. Randomized trials in surgery. *Surgery*. 2009;145(6):581-587.

²⁰ Browner WS, Newman TB, Cummings SR, et al. *Designing Clinical Research*. 5th ed. Wolters Kluwer; 2023.

²¹ Atkins D, Best D, Briss PA, et al. Grading quality of evidence and strength of recommendations. *BMJ*. 2004;328(7454):1490; Andrews JC, Schunemann HJ, Oxman AD, et al. GRADE guidelines: 15. Going from evidence to recommendation-determinants of a recommendation's direction and strength. *J Clin Epidemiol*. 2013;66(7):726-735.

ignorable or uncertain recommendations. It offers “conditional,” “discretionary” and “qualified” as alternatives to “weak.”²² The larger the differences between the desirable and undesirable outcomes, and the lesser the variability in patient values and preferences, the more likely a “strong” recommendation is warranted.²³ “Low” quality evidence may be sufficient to make a “strong” recommendation.²⁴ Dr. Li ignores altogether this aspect of medical decision making.

30. Recommendations made by professional associations in guidelines are infrequently based on well-designed and conducted randomized controlled trials. Instead, recommendations are frequently based on observational studies or, if such studies are unavailable, expert opinion. The medical use of the term “expert opinion” in this context refers to the consensus of experts in the relevant field(s) when studies are not available.

31. For example, Jonathan M. Hazelhurst and colleagues reviewed the guidelines produced by five endocrinology associations that graded the quality of the evidence. The 29 guidelines included 1,762 recommendations, only 191 (10.8%) of which were supported

²² Andrews J, Guyatt G, Oxman AD, et al. GRADE guidelines: 14. Going from evidence to recommendations: The significance and presentation of recommendations. *J Clin Epidemiol.* 2013;66(7):719-725.

²³ For example, among people with cancer of the lymphatic system, young people consistently value a longer life more than avoiding chemotherapy side effects, but some older individuals value avoiding side effects more. This justifies a “strong” recommendation in the younger age group and a “weak” recommendation in the older one. Andrews JC, Schunemann HJ, Oxman AD, et al. GRADE guidelines: 15. Going from evidence to recommendation-determinants of a recommendation's direction and strength. *J Clin Epidemiol.* 2013;66(7):726-735.

²⁴ Andrews JC, Schunemann HJ, Oxman AD, et al. GRADE guidelines: 15. Going from evidence to recommendation-determinants of a recommendation's direction and strength. *J Clin Epidemiol.* 2013;66(7):726-735.

by well-conducted, randomized, controlled trials.²⁵ Similar studies of recommendations in other medical specialties also demonstrate that the minority of recommendations (10.8-29%) are based on “high” quality evidence. See Table 1 (Exhibit B). Similar studies are not available in surgery. Studies of surgery, rather than examining the level of evidence in clinical practice guidelines, examine the level of evidence for procedures performed by a surgeon(s) during a particular timeframe.²⁶

Clinical Practice Guidelines for Gender-Affirming Medical Care

32. The level of evidence supporting clinical practice guidelines recommendations regarding gender-affirming medical care is comparable to the level of evidence supporting many other medical treatments, and gender-affirming medical care should not be held to a higher standard.

33. The Endocrine Society, an international medical organization of over 18,000 endocrinology researchers and clinicians, has published a clinical practice guideline for the treatment of gender-dysphoric/gender-incongruent persons, including pubertal suppression, sex hormone treatment, and surgery for gender confirmation.²⁷ WPATH's Standards of Care for the Health of Transgender and Gender Diverse People, which is

²⁵ Hazlehurst JM, Armstrong MJ, Sherlock M, et al. A comparative quality assessment of evidence-based clinical guidelines in endocrinology. *Clin Endocrinol (Oxf)*. Feb 2013;78(2):183-90. While all of the associations graded the quality of the evidence, not all of the associations used the GRADE methodology.

²⁶ See, for example, Lee JS, Urschel DM, Urschel JD. Is general thoracic surgical practice evidence based? *Ann Thorac Surg*. 2000;70(2):429-431 and Howes N, Chagla L, Thorpe M, McCulloch P. Surgical practice is evidence based. *Br J Surg*. 1997;84(9):1220-1223.

²⁷ Hembree WC, Cohen-Kettenis PT, Gooren L, et al. Endocrine treatment of gender-dysphoric/gender-incongruent persons: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2017;102(11):3869-3903.

currently in its 8th version (“SOC-8”), also provides evidence-based guidelines for the provision of gender-affirming medical care.²⁸ The treatments outlined in these guidelines are also endorsed by other medical professional associations including the American Academy of Family Physicians,²⁹ the AAP,³⁰ the American College of Obstetricians and Gynecologists,³¹ the American Medical Association,³² the American Psychiatric

²⁸ Coleman E, Radix AE, Bouman WP, et al. Standards of care for the health of transgender and gender diverse people, Version 8. *Int J Transgend Health*. 2022;23(Suppl 1):S1-S259.

²⁹ American Academy of Family Physicians. Care for the transgender and gender nonbinary patient. Accessed July 13, 2023. Available at <https://www.aafp.org/about/policies/all/transgender-nonbinary.html#:~:text=The%20American%20Academy%20of%20Family,patients%2C%20including%20children%20and%20adolescents>.

³⁰ Rafferty J, Committee on Psychosocial Aspects of Child and Family Health, Committee on Adolescence, et al. Ensuring comprehensive care and support for transgender and gender-diverse children and adolescents. *Pediatrics*. 2018;142(4):e20182162.

³¹ American College of Obstetricians and Gynecologists. ACOG Committee Opinion Number 823: Health care for transgender and gender diverse individuals. March 2021. Accessed July 13, 2023. Available at <https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2021/03/health-care-for-transgender-and-gender-diverse-individuals/>; American College of Obstetricians and Gynecologists' Committee on Gynecologic Practice and Committee on Health Care for Underserved Women. Health care for transgender and gender diverse individuals: ACOG Committee Opinion, Number 823. *Obstet Gynecol*. 2021;137(3):e75-e88.

³² American Medical Association. Removing financial barriers to care for transgender patients H-185.950. 2022. Accessed July 13, 2023. Available at <https://policysearch.ama-assn.org/policyfinder/detail/H-185.950?uri=%2FAMADoc%2FHOD.xml-0-1128.xml>; Madara JL to McBride B. April 26, 2021. Accessed July 13, 2023. Available at <https://searchlf.ama-assn.org/letter/documentDownload?uri=%2Funstructured%2Fbinary%2Fletter%2FLETTERS%2F2021-4-26-Bill-McBride-opposing-anti-trans-bills-Final.pdf>.

Association,³³ the American Psychological Association,³⁴ and the Pediatric Endocrine Society.³⁵

34. The Endocrine Society clinical practice guideline includes 28 recommendations: 3 (11%) are based on “moderate,” and 19 (68%) are based on “low” or “very low” quality evidence. The remaining 6 (21%) recommendations are Ungraded Good Practice Statements.³⁶ The quality of the evidence supporting these recommendations is similar to the quality of the evidence supporting the recommendations in other endocrine clinical practice guidelines described above.

35. WPATH’s clinical practice guideline makes 150 recommendations, including 11 recommendations in its chapter on Surgery and Postoperative Care. WPATH relies on a similar body of evidence to the Endocrine Society, with the addition of studies published after the Endocrine Society’s guideline.³⁷

36. There are limitations to the use of randomized controlled trials in gender-

³³ American Psychiatric Association. Position statement on treatment of transgender (trans) and gender diverse youth. July 2020. Accessed July 13, 2023. Available at <https://www.psychiatry.org/File%20Library/About-APA/Organization-Documents-Policies/Policies/Position-Transgender-Gender-Diverse-Youth.pdf>.

³⁴ American Psychological Association. Transgender, gender identity, and gender expression non-discrimination. August 2008. Accessed July 13, 2023. Available at <https://www.apa.org/about/policy/transgender.pdf>.

³⁵ Endocrine Society and Pediatric Endocrine Society. Transgender health: Position Statement. December 2020. Accessed July 13, 2023. Available at <https://www.endocrine.org/advocacy/position-statements/transgender-health>; Anton BS. Proceedings of the American Psychological Association for the legislative year 2008: Minutes of the annual meeting of the Council of Representatives. *Am Psychol*. 2009;64:372-453.

³⁶ Hembree WC, Cohen-Kettenis PT, Gooren L, et al. Endocrine treatment of gender-dysphoric/gender-incongruent persons: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2017;102(11):3869-3903.

³⁷ Coleman E, Radix AE, Bouman WP, et al. Standards of care for the health of transgender and gender diverse people, Version 8. *Int J Transgend Health*. 2022;23(Suppl 1):S1-S259.

affirming medical care. As a result of the studies referenced by the Endocrine Society and WPATH, and healthcare providers' experience, randomized controlled trials comparing gender-affirming medical care to no medical care are currently unethical. Potential investigators do not have clinical equipoise between treatment and no treatment; they believe that treatment is superior. Therefore, it would be unethical to not provide treatment to the control group. It is also highly unlikely that enough participants would enroll in randomized controlled trials, knowing they might not receive treatment, for them to be informative.³⁸

37. Even if such studies could be conducted ethically, they would provide a lower quality of evidence because of intrinsic limitations in their design. In addition to the aforementioned limitations of randomized controlled trials in surgery, it would be impossible to blind surgeons or participants to whether the participants underwent gender-affirming surgery. This might bias their perception of the outcomes and lower the rating of the study's quality.³⁹

CONCLUSION

38. Dr. Li holds gender-affirming medical care to too high of a standard; she asserts that it must be supported by randomized controlled trials or, more accurately, "high"

³⁸ Chew D, Anderson J, Williams K, May T, Pang K. Hormonal treatment in young people with gender dysphoria: A systematic review. *Pediatrics*. 2018;141(4):e20173742; Reisner SL, Deutsch MB, Bhasin S, et al. Advancing methods for US transgender health research. *Curr Opin Endocrinol Diabetes Obes*. 2016;23(2):198-207.

³⁹ Browner WS, Newman TB, Cummings SR, et al. Designing Clinical Research. 5th ed. Wolters Kluwer; 2023; Atkins D, Best D, Briss PA, et al. Grading quality of evidence and strength of recommendations. *BMJ*. 2004;328(7454):1490.

quality evidence (because not all randomized controlled trials constitute “high” quality evidence). Medicine and its clinical practice guidelines do not hold recommendations to this standard and it is a standard that few recommendations meet. Only a minority of recommendations in clinical practice guidelines rely on “high” quality evidence. Treating individuals with gender dysphoria with gender-affirming medical care according to clinical practice guidelines, like the Endocrine Society’s and WPATH’s, is evidence-based. The level of evidence is reasonable to support the recommendations and is comparable to the level of evidence available in other fields of medicine.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on August 7, 2023

A handwritten signature in cursive script, reading "Armand H. Matheny Antommaria", is written over a horizontal line.

ARMAND H. MATHENY ANTOMMARIA, MD, PhD

EXHIBIT A

Curriculum Vitae

Last Updated: July 12, 2023

PERSONAL DATA

Armand H. Matheny Antommara, MD, PhD, FAAP, HEC-C

Birth Place: Pittsburgh, Pennsylvania

Citizenship: United States of America

CONTACT INFORMATION

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EDUCATION

1983-1987 BSEE	Valparaiso University, with High Distinction Valparaiso, IN
1983-1987 BS	Valparaiso University (Chemistry), with High Distinction Valparaiso, IN
1987-1989 MD	Washington University School of Medicine
1998-2000	Saint Louis, MO
1989-2000 PhD	The University of Chicago Divinity School (Religious Ethics) Chicago, IL
2000-2003 Resident	University of Utah (Pediatrics) Salt Lake City, UT
2005-2006 Certificate	Conflict Resolution Certificate Program, University of Utah Salt Lake City, UT

BOARD CERTIFICATION

2019 Pediatric Hospital Medicine, American Board of Pediatrics
2019 Healthcare Ethics Consultant-Certified, Healthcare Ethics Consultation
Certification Commission
2004 General Pediatrics, American Board of Pediatrics

PROFESSIONAL LICENSES

2012-Present	Doctor of Medicine, Ohio
2006-2010	Alternative Dispute Resolution Provider—Mediator, Utah
2001-2014	Physician and Surgeon, Utah
2001-2014	Physician and Surgeon Controlled Substance, Utah

PROFESSIONAL EXPERIENCE

Full Time Positions

2019-Present *Professor*
Cincinnati Children's Hospital Medical Center, Cincinnati, OH
Department of Surgery

2019-Present *Professor of Clinical-Affiliated*
University of Cincinnati, Cincinnati, OH
Department of Surgery

2017-Present *Professor*
Cincinnati Children's Hospital Medical Center, Cincinnati, OH
Division of Pediatric Hospital Medicine

2017-Present *Professor of Clinical-Affiliated*
University of Cincinnati, Cincinnati, OH
Department of Pediatrics

2016-2017 *Associate Professor of Clinical-Affiliated*
University of Cincinnati, Cincinnati, OH
Department of Pediatrics

2012-2017 *Associate Professor*
Cincinnati Children's Hospital Medical Center, Cincinnati, OH
Division of Pediatric Hospital Medicine

2012-Present *Lee Ault Carter Chair in Pediatric Ethics*
Cincinnati Children's Hospital Medical Center

2012-2016 *Associate Professor-Affiliated*
University of Cincinnati, Cincinnati, OH
Department of Pediatrics

2010-2012 *Associate Professor of Pediatrics (with Tenure)*
University of Utah School of Medicine, Salt Lake City, UT
Divisions of Inpatient Medicine and Medical Ethics

2010-2012 *Adjunct Associate Professor of Medicine*
University of Utah School of Medicine, Salt Lake City, UT
Division of Medical Ethics and Humanities

2004-2010 *Assistant Professor of Pediatrics (Tenure Track)*
University of Utah School of Medicine, Salt Lake City, UT
Divisions of Inpatient Medicine and Medical Ethics

2004-2010 *Adjunct Assistant Professor of Medicine*
University of Utah School of Medicine, Salt Lake City, UT
Division of Medical Ethics and Humanities

2003-2004 *Instructor of Pediatrics (Clinical Track)*
University of Utah School of Medicine, Salt Lake City, UT
Divisions of Inpatient Medicine and Medical Ethics

2003-2004 *Adjunct Instructor of Medicine*
University of Utah School of Medicine, Salt Lake City, UT
Division of Medical Ethics

Part Time Positions

2023-Present *Expert Witness*, Report
Poe, et al, v. Drummond, et al., United States District Court for the
Northern District of Oklahoma, Case No. 23-cv-00177-JFH-SH

2023-Present *Expert Witness*, Report
L.W., et al., v. Skrmetti, et al., United States District Court for the Middle
District of Tennessee, Case No. 3:23-cv-00376.

2022-Present *Expert Witness*, Reports, Deposition, and Testimony
Dekker, et al., v. Marstiller, et al., United States District Court for the
Northern District of Florida, Case No. 4:22-cv-00325-RH-MAF

2022- Present *Expert Witness*, Report, Deposition, and Testimony
Eknes-Tucker, et al., v. Marshall, et al., United States District Court
Middle District of Alabama Northern Division, Case No. 2:22-cv0-184-
LCB.

2022-Present *Expert Witness*, Report and Testimony
Jane Doe, et al., v. Greg Abbott, et al., District Court of Travis County,
Texas 353rd Judicial District, Case No. D-1-GN-22-000977

2021-2022 *Expert Witness*, Reports, Deposition, and Testimony
Dylan Brandt, et al., v. Leslie Rutledge, et al., United States District
Court, Eastern District of Arkansas, Case No.: 5:21-CV-00450-JM-1

2021 *Consultant*
Proctor & Gamble, Cincinnati, OH

2019 *Consultant*
Sanofi Genzyme, Cambridge, MA

2018-Present *Consultant*
Center for Conflict Resolution in Healthcare, Memphis, TN

2017-2020 *Consultant*
Amicus Therapeutics, Cranbury, NJ

2017 *Consultant*
Sarepta Therapeutics, Cambridge, MA

2014 *Consultant*
Genzyme, A Sanofi Company, Cambridge, MA

Editorial Experience

Editorial Board

2020-Present *Pediatrics*, Associate Editor for Ethics Rounds and Member of the
Executive Editorial Board

2015-2020 *Journal of Clinical Ethics*

2009-2020 *Journal of Medical Humanities*

Guest Academic Editor

2017 *PLOS/ONE*

Ad Hoc Reviewer: *Academic Medicine, Academic Pediatrics, AJOB Primary Research, American Journal of Bioethics, American Journal of Law & Medicine, American Journal of Medical Genetics, American Journal of Transplantation, BMC Medical Ethics, BMJ Open, Canadian Journal of Bioethics, CHEST, Clinical Transplantation, European Journal of Human Genetics, European Journal of Pediatrics, Frontiers in Genetics, Hospital Medicine, International Journal of Health Policy and Management, International Journal of Nursing Studies, Journal of Adolescent and Young Adult Oncology, Journal of Clinical Ethics, Journal of Empirical Research on Human Research Ethics, Journal of General Internal Medicine, Journal of Healthcare Leadership, Journal of Hospital Medicine, Journal of the Kennedy Institute of Ethics, Journal of Law, Medicine & Ethics, Journal of Medical Ethics, Journal of Medical Humanities, Journal of Medicine and Life, Journal of Palliative Care, Journal of Pediatrics, Journal of Pediatric Surgery, Mayo Clinic Proceedings, Medicine, Healthcare and Philosophy, Molecular Diagnosis & Therapy, New England Journal of Medicine, Patient Preference and Adherence, Pediatrics, Pediatrics in Review, Personalized Medicine, PLOS/ONE, Risk Management and Healthcare Policy, Saudi Medical Journal, SSM - Qualitative Research in Health, and Theoretical Medicine and Bioethics*

SCHOLASTIC AND PROFESSIONAL HONORS

2023	<i>Digital Health Award, Bronze Medal in the Digital Health Media/Publications category for <i>Pediatric Collections: Ethics Rounds: A Casebook in Pediatric Bioethics Part II</i>, Health Information Resource Center, Libertyville, IL</i>
2021	<i>Hidden Gem Award, Cincinnati Children's Hospital Medical Center, Cincinnati, OH</i>
2019-2022	<i>Presidential Citation, American Society for Bioethics and Humanities, Chicago, IL</i>
2016	<i>Laura Mirkinson, MD, FAAP Lecturer, Section on Hospital Medicine, American Academy of Pediatrics, Elk Grove Village, IL</i>
2016, 2018	<i>Certificate of Excellence, American Society for Bioethics and Humanities, Glenview, IL</i>
2013, 2016	<i>Senior Resident Division Teaching Award, Cincinnati Children's Hospital Medical Center, Cincinnati, OH</i>
2012	<i>Role Model, Quality Review Committee, Primary Children's Medical Center, Salt Lake City, UT</i>
2011	<i>Member, Society for Pediatric Research, The Woodlands, TX</i>
2011	<i>Presidential Citation, American Society for Bioethics and Humanities, Glenview, IL</i>
2009	<i>Role Model, Quality Review Committee, Primary Children's Medical Center, Salt Lake City, UT</i>

2008	<i>Nominee</i> , Physician of the Year, Primary Children's Medical Center, Salt Lake City, UT
2005-2006	<i>Fellow</i> , Medical Scholars Program, University of Utah School of Medicine, Salt Lake City, UT
1995-1997	<i>Doctoral Scholar</i> , Crossroads, A Program of Evangelicals for Social Action, Philadelphia PA
1989-1992	<i>Fellow</i> , The Pew Program in Medicine, Arts, and the Social Sciences, University of Chicago, Chicago, IL

ADMINISTRATIVE EXPERIENCE

Administrative Duties

2023-Present	<i>Chair</i> , Literature Selection Technical Review Committee, National Library of Medicine, Bethesda, MD
2019-Present	<i>Chair</i> , Oversight Committee, Cincinnati Fetal Center, Cincinnati, OH
2014-Present	<i>Chair</i> , Ethics Committee, Cincinnati Children's Hospital Medical Center, Cincinnati, OH
2012-Present	<i>Director</i> , Ethics Center, Cincinnati Children's Hospital Medical Center, Cincinnati, OH
2012-Present	<i>Chair</i> , Ethics Consultation Subcommittee, Cincinnati Children's Hospital Medical Center, Cincinnati, OH
2010	<i>Co-Chair</i> , Ethics Subcommittee, Work Group for Emergency Mass Critical Care in Pediatrics, Centers for Disease Control and Prevention, Atlanta, GA
2009	<i>Chair</i> , Ethics Working Group, H1N1 and Winter Surge, Primary Children's Medical Center, Salt Lake City, UT
2005-2012	<i>Chair</i> , Ethics Committee, Primary Children's Medical Center, Salt Lake City, UT
2005-2012	<i>Chair</i> , Ethics Consultation Subcommittee, Primary Children's Medical Center, Salt Lake City, UT
2003-4	<i>Chair</i> , Clinical Pertinence Committee, Primary Children's Medical Center, Salt Lake City, UT

Professional & Scientific Committees

Committees

2023-Present	<i>Member</i> , Expert Committee, Humanitarian Access Program, Alnylam Pharmaceuticals, Cambridge, MA
2021	<i>Member</i> , EMCO Capacity Collaboration, Ohio Hospital Association, Columbus, OH
2020-2021	<i>Member</i> , Allocation of Scarce Resources Work Group, Ohio Hospital Association, Columbus, OH
2020-Present	<i>Member</i> , Literature Selection Technical Review Committee, National Library of Medicine, Bethesda, MD
2020	<i>Member</i> , Crisis Standards of Care Workgroup, The Health Collaborative,

Cincinnati, OH

2019-Present *Member*, Healthcare Ethics Consultant Certification Commission, Oak Park, IL

2019 *Member*, Expert Panel, Pediatric Oncology End-of-Life Care Quality Markers, Institute for Cancer Outcomes & Survivorship, University of Alabama at Birmingham, Birmingham, AL

2018 *Member*, Resource Planning and Allocation Team Implementation Task Force, Ohio Department of Health, Columbus, OH

2012-Present *Member*, Gaucher Initiative Medical Expert Committee, Project HOPE, Millwood, VA

2009-2014 *Member*, Clinical Ethics Consultation Affairs Committee, American Society for Bioethics and Humanities, Glenview, IL

2005-2011 *Member*, Committee on Bioethics, American Academy of Pediatrics, Oak Park, IL

Data Safety and Monitoring Boards

2019-Present *Member*, Data and Safety Monitoring Board, Sickle Cell Domestic Trials, National Heart, Lung, and Blood Institute, Bethesda, MD

2018-2019 *Member*, Standing Safety Committee for P-188-NF (Carmeseal-MD™) in Duchenne Muscular Dystrophy, Phrixus Pharmaceuticals, Inc., Ann Arbor, MI

2017-Present *Member*, Observational Study Monitoring Board, Sickle Cell Disease Observational Monitoring Board, National Heart, Lung, and Blood Institute, Bethesda, MD

2016-2018 *Member*, Observational Study Monitoring Board, Long Term Effects of Hydroxyurea in Children with Sickle Cell Anemia, National Heart, Lung, and Blood Institute, Bethesda, MD

Reviewer

2020-Present *Abstract Reviewer*, American Society for Bioethics and Humanities Annual Meeting

2020 *Grant Reviewer*, The Croatian Science Foundation, Hrvatska zaklada za znanost (HRZZ)

2018 *Book Proposal Reviewer*, Elsevier

2018-2019 *Category Leader*, Religion, Culture, and Social Sciences, American Society for Bioethics and Humanities Annual Meeting

2017 *Timekeeper*, American Society for Bioethics and Humanities Annual Meeting

2017-Present *Abstract Reviewer*, Pediatric Academic Societies Annual Meeting

2016-2021 *Workshop Reviewer*, Pediatric Academic Societies Annual Meeting

2016 *Grant Reviewer*, Innovation Research Incentives Scheme, The Netherlands Organisation for Health Research and Development

2016-2017 *Abstract Reviewer*, American Society for Bioethics and Humanities

	Annual Meeting
2014, 2016	<i>External Peer Reviewer</i> , PSI Foundation, Toronto, Ontario, Canada
2014	<i>Member</i> , Scientific Committee, International Conference on Clinical Ethics and Consultation
2013	<i>Abstract Reviewer</i> , American Society for Bioethics and Humanities Annual Meeting
2013	<i>Reviewer</i> , Open Research Area Plus, Agence Nationale de la Recherche, Deutsche Forschungsgemeinschaft, Economic and Social Research Council, National Science Foundation, and Organization for Scientific Research
2011-2012	<i>Abstract Reviewer</i> , Pediatric Academic Societies Annual Meeting
2011-2013	<i>Workshop Reviewer</i> , Pediatric Academic Societies Annual Meeting
2011-2014	<i>Abstract Reviewer</i> , Pediatric Hospital Medicine Annual Meeting
2011-2012	<i>Religious Studies Subcommittee Leader</i> , Program Committee, American Society for Bioethics and Humanities Annual Meeting
2010	<i>Abstract Reviewer</i> , American Society for Bioethics and Humanities Annual Meeting
Other	
2023	<i>Member</i> , Student Paper Committee, American Society for Bioethics and Humanities
2021	<i>Timekeeper</i> , American Society for Bioethics and Humanities Annual Meeting
2021	<i>Mentor</i> , Early Career Advisor Professional Development Track, American Society for Bioethics and Humanities.
2021	<i>Mentor</i> , Early Career Advisor Paper or Project Track, American Society for Bioethics and Humanities.
2109	<i>Mentor</i> , Early Career Advising Program, American Society for Bioethics and Humanities
2018	<i>Passing Point Determination</i> , Healthcare Ethics Consultant-Certified Examination, Healthcare Ethics Consultant Certification Commission
2018	<i>Member</i> , Examination Committee, Healthcare Ethics Consultant-Certified Examination, Healthcare Ethics Consultant Certification Commission
2018	<i>Item Writer</i> , Healthcare Ethics Consultant-Certified Examination, Healthcare Ethics Consultant Certification Commission

UNIVERSITY COMMUNITY ACTIVITIES

Cincinnati Children's Hospital Medical Center

2023-Present	<i>Member</i> , Executive Committee, Discover Together Biobank
2020-Present	<i>Member</i> , Faculty Diversity and Inclusion Steering Committee
2020-Present	<i>Member</i> , Medical Management of COVID-19 Committee
2020-2021	<i>Member</i> , Caregiver Refusal Team
2020-2021	<i>Member</i> , COVID-19 Vaccine Allocation Committee

2020	<i>Member</i> , Personal Protective Equipment Subcommittee of the COVID-19 Steering Committee
2018-2019	<i>Member</i> , Planning Committee, Center for Clinical & Translational Science & Training Research Ethics Conference
2017-Present	<i>Member</i> , Donor Selection Committee
2017-2020	<i>Member</i> , Employee Emergency Fund Review Committee
2017	<i>Member</i> , Root Cause Analysis Team
2016-2017	<i>Member</i> , Planning Committee, Center for Clinical & Translational Science & Training Research Ethics Conference
2015-2019	<i>Member</i> , Destination Excellence Medical Advisory Committee
2015-Present	<i>Member</i> , Disorders of Sexual Development Case Review Committee
2015-2019	<i>Member</i> , Destination Excellence Case Review Committee
2014-2018	<i>Member</i> , Genomics Review Group, Institutional Review Board
2014-2017	<i>Member</i> , Center for Pediatric Genomics Leadership Committee
2013-2017	<i>Member</i> , Genetic Testing Subcommittee, Health Network
2013-2016	<i>Member</i> , Schwartz Center Rounds Planning Committee
2013-2014	<i>Member</i> , Genomics Ad Hoc Subcommittee, Board of Directors
2012-Present	<i>Member</i> , Cincinnati Fetal Center Oversight Committee
2012-Present	<i>Member</i> , Ethics Committee
2012-Present	<i>Member</i> , G-23
2012-2016	<i>Member</i> , Integrated Solid Organ Transplant Steering Committee

University of Utah

2009-2012	<i>Member</i> , Consolidated Hearing Committee
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University of Utah School of Medicine

2010-2012	<i>Member</i> , Medical Ethics, Humanities, and Cultural Competence Thread Committee
2008-2010	<i>Member</i> , Fourth Year Curriculum Committee

University of Utah Department of Pediatrics

2010-2011	<i>Member</i> , Planning Committee, 25 th Annual Biological Basis of Children's Health Conference, "Sex, Gender, and Sexuality"
2009-2012	<i>Member</i> , Medical Executive Committee
2005-2012	<i>Member</i> , Retention, Promotion, and Tenure Committee
2004-2012	<i>Interviewer</i> , Residency Program
2003-2012	<i>Member</i> , Education Committee

Intermountain Healthcare

2009-2012	<i>Member</i> , System-Wide Bioethics Resource Service
2009-2012	<i>Member</i> , Pediatric Guidance Council

Primary Children's Medical Center

2012-2012 *Member*, Shared Accountability Organization Steering Committee
2009 *Member*, H1N1 and Winter Surge Executive Planning Team
2005-2010 *Member*, Continuing Medical Education Committee
2005-2010 *Member*, Grand Rounds Planning Committee
2003-2012 *Member*, Ethics Committee

ACTIVE MEMBERSHIPS IN PROFESSIONAL SOCIETIES

2012-Present Association of Bioethics Program Directors
2011-Present Society for Pediatric Research
2000-Present American Academy of Pediatrics
1999-Present American Society of Bioethics and Humanities

FUNDING

Past Grants

2015-2019 “Better Outcomes for Children: Promoting Excellence in Healthcare Genomics to Inform Policy.”
Percent Effort: 9%
National Human Genome Research Institute
Grant Number: 1U01 HG008666-01
Role: Investigator

2015-2016 “Ethics of Informed Consent for Youth in Foster Care”
Direct Costs: \$10,000
Ethics Grant, Center for Clinical and Translational Science and Training
University of Cincinnati Academic Health Center
Role: Co-Investigator

2014-2015 “Extreme Personal Exposure Biomarker Levels: Engaging Community Physicians and Ethicists for Guidance”
Direct Costs: \$11,640
Center for Environmental Genetics
University of Cincinnati College of Medicine
Role: Investigator

2014-2015 “Child, Adolescent, and Parent Opinions on Disclosure Policies for Incidental Findings in Clinical Whole Exome Sequencing”
Direct Costs: \$4,434
Ethics Grant, Center for Clinical and Translational Science and Training,
University of Cincinnati Academic Health Center
Role: Principal Investigator

- 2013-2014 “Better Outcomes for Children: GWAS & PheWAS in eMERGEII
Percent Effort: 5%
National Human Genome Research Institute
Grant Number: 3U01HG006828-0251
Role: Investigator
- 2004-2005 "Potential Patients' Knowledge, Attitudes, and Beliefs Regarding
Participating in Medical Education: Can They be Interpreted in Terms of
Presumed Consent?"
Direct Costs: \$8,000
Interdisciplinary Research in Applied Ethics and Human Values, University
Research Committee, University of Utah
Role: Principal Investigator

TEACHING RESPONSIBILITIES/ASSIGNMENTS

Course and Curriculum Development

- 2003-2012 Medical Ethics, Internal Medicine 7560, University of Utah School of
Medicine, Taught 1 time per year, Taken by medical students, Enrollment
100

Course Lectures

- 2018, 2021 Introduction to Biotechnology, “Ethics and Biotechnology” and “Clinical
Ethics,” BIOL 3027, University of Cincinnati, Taught 1 time per year,
Taken by undergraduate students, Enrollment 25.
- 2018-Present Biomedical Ethics, “Conscientious Objection in Healthcare” and “Ethical
Issues in the Care of Transgender Adolescents,” MEDS 4035 & MEDS
4036, University of Cincinnati College of Medicine, Taught 1 time per
year, Taken by senior undergraduate students, Enrollment 52.
- 2016 Foundations of Healthcare Ethics and Law, “Clinical Ethics,” HESA 390,
Xavier University.
- 2014-Present Physicians and Society, “Transfusion and the Jehovah’s Witness Faith,”
“Obesity Management: Ethics, Policy, and Physician Implicit Bias,”
“Embryos and Ethics: The Ethics of Designer Babies,” “Ethics and
Genetic Testing,” and “Ethics and Direct to Consumer Genetic Testing,”
26950112 and 26950116, University of Cincinnati School of Medicine,
Taken by first and second year medical students, Enrollment 100.
- 2014-Present Ethical Issues in Health Care, “Ethical Issues in Managing Drug
Shortages: The Macro, Meso, and Micro Levels,” HESA 583, College of
Social Sciences, Health, and Education Health Services Administration,
Xavier University, Taken by health services administration students,
Enrollment 25.

- 2009 Physical Diagnosis II, Internal Medicine 7160, University of Utah School of Medicine, Taught 1 time per year, Taken by medical students, Enrollment 100
- 2003-2012 Medical Ethics, Internal Medicine 7560, University of Utah School of Medicine, Taught 1 time per year, Taken by fourth year medical students, Enrollment 100

Small Group Teaching

- 2018-Present Ethics in Research, GNTD 7003-001, University of Cincinnati School of Medicine, Taught 1 time per year, Taken by fellows, MS, and PhD students, Enrollment 110.
- 2007 Physical Diagnosis I, Internal Medicine 7150, University of Utah School of Medicine, Taught 1 time per year, Taken by medical students, Enrollment 100
- 2003-2012 Medical Ethics, Internal Medicine 7560, University of Utah School of Medicine, Taught 1 time per year, Taken by fourth medical students, Enrollment 100
- 2003 Pediatric Organ System, Pediatrics 7020, University of Utah School of Medicine, Taught 1 time per year, Taken by medical students, Enrollment 100

Graduate Student Committees

- 2018-2022 *Chair*, Scholarship Oversight Committee, William Sveen, Pediatric Critical Care Fellowship, Cincinnati Children's Hospital Medical Center, Cincinnati, OH
- 2018-2020 *Member*, Scholarship Oversight Committee, Anne Heueman, Genetic Counseling, University of Cincinnati, Cincinnati, OH
- 2017-2019 *Chair*, Scholarship Oversight Committee, Bryana Rivers, Genetic Counseling, University of Cincinnati, Cincinnati, OH
- 2013-2015 *Mentor*, Sophia Hufnagel, Combined Pediatrics/Genetics Residency, Cincinnati Children's Hospital Medical Center, Cincinnati, OH
- 2013-2015 *Co-Chair*, Scholarship Oversight Committee, Andrea Murad, Genetic Counseling, University of Cincinnati, Cincinnati, OH
- 2013-2014 *Member*, Scholarship Oversight Committee, Grace Tran, Genetic Counseling, University of Cincinnati, Cincinnati, OH
- 2011-2012 *Chair*, Scholarship Oversight Committee, Kevin E. Nelson, MD, PhD, Pediatric Inpatient Medicine Fellowship, University of Utah, Salt Lake City, UT

Continuing Education Lectures

- 2008 Choosing Healthplans All Together (CHAT) Exercise Facilitator, 18th Annual Intermountain Medical Ethics Conference, "Setting Priorities for Healthcare in Utah: What Choices are We Ready to Make?," Salt Lake City, Utah, October 3.

- 2007 *Speaker*, Infant Medical Surgical Unit, Primary Children's Medical Center, "Withholding and Withdrawing Artificial Nutrition and Hydration: Can It Be Consistent With Care?," Salt Lake City, Utah, September 6.
- 2007 *Faculty Scholar-in Residence*, Summer Seminar, "The Role of Religion in Bioethics," Utah Valley State College, Orem, Utah, May 1.
- 2006 *Workshop Leader*, Faculty Education Retreat, "Publications and Publishing in Medical Education," University of Utah School of Medicine, Salt Lake City, Utah, September 15.
- 2006 *Breakout Session*, 16th Annual Intermountain Medical Ethics Conference, "Donation after Cardiac Death: Evolution of a Policy," Salt Lake City, Utah, March 28.

Other Educational Activities

- 2008 *Instructor*, Contemporary Ethical Issues in Medicine and Medical Research, Osher Lifelong Learning Institute, University of Utah, "Religion and Bioethics: Religiously Based Demands for and Refusals of Treatment," Salt Lake City, Utah, February 7.
- 2007 *Speaker*, Biology Seminar, Utah Valley State College, "Is He Dead?: Criteria of the Determination of Death and Their Implications for Withdrawing Treatment and Recovering Organs for Transplant," Orem, Utah, September 21.

PEER-REVIEWED JOURNAL ARTICLES

1. Erica K. Salter, D. Micah Hester, Lou Vinarcsik, Armand H. Matheny Antommara, Johan Bester, Jeffrey Blustein, Ellen Wright Clayton, Douglas S. Diekema, Ana S. Iltis, Loretta M. Kopelman, Jay R. Malone, Mark R. Mercurio, Mark C. Navin, Erin Talati Paquette, Thaddeus Mason Pope, Rosamond Rhodes, and Lainie F. Ross, (Forthcoming) "Pediatric Decision Making: Consensus Recommendations," *Pediatrics*.
2. William N. Sveen, Armand H. Matheny Antommara, Stephen Gilene, and Erika L. Stalets. (2023) "Adverse Events During Apnea Testing for the Determination of Death by Neurologic Criteria: A Single Center, Retrospective Pediatric Cohort." *Pediatric Critical Care Medicine*. 24: 399-405. PMID: 36815829.
3. Erica K. Salter, Jay R. Malone, Amanda Berg, Annie Friedrich, Alexandra Hucker, Hillary King, and Armand H. Matheny Antommara. (2023) "Triage Policies at U.S. Hospitals with Pediatric Intensive Care Units." *AJOB Empirical Bioethics*. 14: 84-90. PMID: 36576201.
4. Armand H. Matheny Antommara, Elizabeth Lanphier, Anne Housholder, and Michelle McGowan. (2023). "A mixed methods analysis of requests for religious exemptions to a COVID-19 vaccine requirement." *AJOB Empirical Bioethics*. 14: 15-22. PMID: 36161802.

5. Anne C Heuerman, Danielle Bessett, Armand H. Matheny Antommara, Leandra. K. Tulusso, Nicki Smith, Alison H. Norris and Michelle L. McGowan (2022). "Experiences of reproductive genetic counselors with abortion regulations in Ohio." *Journal of Genetic Counseling*. 31: 641-652. PMID: 34755409.
6. Armand H. Matheny Antommara and Ndidu I. Unaka. (2021) "Counterpoint: Prioritizing Health Care Workers for Scarce Critical Care Resources is Impractical and Unjust." *Journal of Hospital Medicine*. 16: 182-3. PMID 33617445.
7. Gregory A. Grabowski, Armand H. Matheny Antommara, Edwin H. Kolodny, and Pramod K. Mistry. (2021) "Gaucher Disease: Basic and Translational Science Needs for More Complete Therapy and Management." *Molecular Genetics and Metabolism*. 132: 59-75. PMID: 33419694.
8. Armand H. Matheny Antommara, Laura Monhollen, and Joshua K. Schaffzin. (2021) "An Ethical Analysis of Hospital Visitor Restrictions and Masking Requirements During the COVID-19." *Journal of Clinical Ethics*. 32(1): 35-44. PMID 33416516.
9. Armand H. Matheny Antommara (2020) "The Pediatric Hospital Medicine Core Competencies: 4.05 Ethics." *Journal of Hospital Medicine*. 15(S1): 120-121.
10. Armand H. Matheny Antommara, Tyler S. Gibb, Amy L. McGuire, Paul Root Wolpe, Matthew K. Wynia, Megan K. Applewhite, Arthur Caplan, Douglas S. Diekema, D. Micah Hester, Lisa Soleymani Lehmann, Renee McLeod-Sordjan, Tamar Schiff, Holly K. Tabor, Sarah E. Wieten, and Jason T. Eberl for a Task Force of the Association of Bioethics Program Directors (2020) "Ventilator Triage Policies During the COVID-19 Pandemic at U.S. Hospitals Associated With Members of the Association of Bioethics Program Directors." *Annals of Internal Medicine*. 173(3): 188-194. PMID: 32330224.
11. Armand H. Matheny Antommara (2020) "Conflicting Duties and Reciprocal Obligations During a Pandemic." *Journal of Hospital Medicine*. 5:284-286. PMID: 32379030.
12. Mary V. Greiner, Sarah J. Beal, and Armand H. Matheny Antommara (2020) "Perspectives on Informed Consent Practices for Minimal-Risk Research Involving Foster Youth." *Pediatrics*. 45:e20192845. PMID: 32156772.
13. Jennifer deSante-Bertkau, Michelle McGowan, and Armand H. Matheny Antommara (2018) "Systematic Review of Typologies Used to Characterize Clinical Ethics Consultations." *Journal of Clinical Ethics*. 29:291-304. PMID: 30605439.
14. Andrew J. Redmann, Melissa Schopper, Armand H. Matheny Antommara, Judith Ragsdale, Alessandro de Alarcon, Michael J. Jutter, Catherine K. Hart, and Charles M. Myer. (2018) "To Transfuse or Not to Transfuse? Jehovah's Witnesses and PostOperative Hemorrhage in Pediatric Otolaryngology." *International Journal of Pediatric Otorhinolaryngology*. 115:188-192. PMID: 30368384.
15. Armand H. Matheny Antommara, Kyle B. Brothers, John A. Myers, Yana B Feygin, Sharon A. Aufox, Murray H. Brilliant, Pat Conway, Stephanie M. Fullerton, Nanibaa' A. Garrison, Carol R. Horowitz, Gail P. Jarvik, Rongling Li, Evette J. Ludman, Catherine A. McCarty, Jennifer B. McCormick, Nathaniel D. Mercaldo, Melanie F. Myers, Saskia C. Sanderson, Martha J. Shrubsole, Jonathan S. Schildcrout, Janet L.

- Williams, Maureen E. Smith, Ellen Wright Clayton, Ingrid A. Holm. (2018) "Parents' Attitudes toward Consent and Data Sharing in Biobanks: A Multi-Site Experimental Survey." *AJOB Empirical Research*. 21:1-15. PMID: 30240342.
16. Armand H. Matheny Antommara and Cynthia A. Prows. (2018) "Content Analysis of Requests for Religious Exemptions from a Mandatory Influenza Vaccination Program for Healthcare Personnel" *Journal of Medical Ethics*. 44: 389-391. PMID: 29463693.
17. Armand H. Matheny Antommara (2017) "May Medical Centers Give Nonresident Patients Priority in Scheduling Outpatient Follow-Up Appointments?" *Journal of Clinical Ethics*. 28: 217-221. PMID: 28930708.
18. Andrea M. Murad, Melanie F. Myers, Susan D. Thompson, Rachel Fisher, and Armand H. Matheny Antommara (2017) "A Qualitative Study of Adolescents' Understanding of Biobanks and Their Attitudes Toward Participation, Re-contact, and Data Sharing." *American Journal of Medical Genetics: Part A*. 173: 930-937. PMID: 28328120.
19. Saskia Sanderson, Kyle Borthers, Nathaniel Mercaldo, Ellen Wright Clayton, Armand Antommara, Sharon Aufox, Murray Brilliant, Diego Campos, David Carrell, John Connolly, Pat Conway, Stephanie Fullerton, Nanibaa Garrison, Carol Horowitz, Gail Jarvik, David Kaufman, Terrie Kitchner, Rongling Li, Evette Ludman, Catherine McCarty, Jennifer McCormick, Valerie McManus, Melanie Myers, Aaron Scrol, Janet Williams, Martha Shrubsole, Jonathan Schildcrout, Maureen Smith, and Ingrid Holm (2017) "Public Attitudes Towards Consent and Data Sharing in Biobank Research: A Large Multisite Experimental Survey in the US." *The American Journal of Human Genetics*. 100: 414-427. PMID: 28190457.
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1. Benjamin S. Wilfond, David Magnus, Armand H Matheny Antommara, Paul Appelbaum, Judy Aschner, Keith J. Barrington, Tom Beauchamp, Renee D. Boss, Wylie Burke, Arthur L. Caplan, Alexander M. Capron, Mildred Cho, Ellen Wright Clayton, F. Sessions Cole, Brian A. Darlow, Douglas Diekema, Ruth R. Faden, Chris Feudtner, Joseph J. Fins, Norman C. Fost, Joel Frader, D. Micah Hester, Annie Janvier, Steven Joffe, Jeffrey Kahn, Nancy E. Kass, Eric Kodish, John D. Lantos, Laurence McCullough, Ross McKinney, Jr., William Meadow, P. Pearl O'Rourke, Kathleen E. Powderly, DeWayne M. Pursley, Lainie Friedman Ross, Sadath Sayeed, Richard R. Sharp, Jeremy Sugarman, William O. Tarnow-Mordi, Holly Taylor, Tom Tomlison, Robert D. Truog, Yoram T. Unguru, Kathryn L. Weise, David Woodrum,

- Stuart Youngner (2013) "The OHRP and SUPPORT," *New England Journal of Medicine*, 368: e36. PMID: 23738513.
2. Lainie Friedman Ross and Armand H. Matheny Antommara (2011) "In Further Defense of the American Academy of Pediatrics Committee on Bioethics 'Children as Hematopoietic Stem Cell Donors' Statement." *Pediatric Blood & Cancer*. 57: 1088-9.
 3. Armand H. Matheny Antommara (2011) "Growth Attenuation: Health Outcomes and Social Services." *Hastings Center Report*, 41(5): 4. PMID: 21980886.
 4. Susan Bratton and Armand H. Matheny Antommara (2010) "Dead Donor Rule and Organ Procurement: The Authors Reply." *Pediatric Critical Care Medicine*, 11: 314-5.
 5. Armand H. Matheny Antommara and Joel Frader (2009) "Policies of Children's Hospitals on Donation After Cardiac Death—Reply." *Journal of the American Medical Association*, 302: 845.

Case Reports

Armand H. Matheny Antommara (2002) "Case 4.9: Inappropriate Access to a Celebrity's Medical Records." In *Ethics and Information Technology: A Case-Based Approach to a Health Care System in Transition*, James G. Anderson and Kenneth W. Goodman, 79-80. New York: Springer-Verlag.

Book Reviews

1. Armand H. Matheny Antommara (In Press) Review of *Mormonism, Medicine, and Bioethics*, by Courtney S. Campbell. *Mormon Studies Review*.
2. Armand H. Matheny Antommara (2023) "An Ambitious Goal: A Grounded, Informed, and Compelling Theological Bioethics." Review of *Disability's Challenge to Theology: Genes, Eugenics, and the Metaphysics of Modern Medicine* by Devan Stahl. *Hastings Center Report* 53(2): 44-45.
3. Armand H. Matheny Antommara (2021) Review of *When Harry Became Sally: Responding to the Transgender Moment*, by Ryan T. Anderson. *Journal of Medical Humanities* 42: 195-9. PMID 31808021.
4. Armand H. Matheny Antommara (2012) Review of *The Ethics of Organ Transplantation*, by Steven J. Jensen, ed., *Journal of the American Medical Association* 308: 1482-3.
5. Armand H Matheny Antommara (2012) Review of *The Soul of Medicine: Spiritual Perspectives and Clinical Practice*, by John R. Peteet and Michael N. D'Ambra, ed., *Journal of the American Medical Association* 308: 87.
6. Armand H. Matheny Antommara (2009) Review of *Conflicts of Conscience in Health Care: An Institutional Compromise*, by Holly Fernandez Lynch. *American Journal of Bioethics* 9: 63-4.
7. Armand H. Matheny Antommara (2008) Review of *A Practical Guide to Clinical Ethics Consulting: Expertise, Ethos, and Power*, by Christopher Meyers. *American Journal of Bioethics* 8: 72-3.

8. Armand H. Matheny Antommara (2004) Review of *Children, Ethics, and Modern Medicine*, by Richard B. Miller. *American Journal of Bioethics* 4: 127-8.
9. Armand H. Matheny Antommara (2002) Review of *Ward Ethics: Dilemmas for Medical Students and Doctors in Training*, by Thomasine Kushner and David Thomasma, ed. *American Journal of Bioethics* 2: 70-1. PMID: 22494193.
10. Armand H. Matheny Antommara (1999) Review of *Human Cloning: Religious Responses*, by Ronald Cole-Turner, ed. *Prism* 6 (March/April): 21.
11. Armand H. Matheny Antommara (1999) Review of *Christian Theology and Medical Ethics: Four Contemporary Approaches*, by James B. Tubbs, Jr. *Journal of Religion* 79 (April): 333-5.
12. Armand H. Matheny Antommara (1997) Review of *Body, Soul, and Bioethics*, by Gilbert C. Meilaender. *Prism* 4 (May/June): 28.

Newspaper Articles

1. W. Bradley Poss and Armand H. Matheny Antommara (2010) "Mass casualty planning must incorporate needs of children." *AAP News* 31 (July): 38.
2. Robert Murray and Armand H. Matheny Antommara (2010) "Pediatricians should work with school nurses to develop action plans for children with DNAR orders." *AAP News* 31 (May): 30..
3. Armand H. Matheny Antommara (2009) "Addressing physicians' conscientious objections in health care." *AAP News* 30 (December): 32.

UNPUBLISHED POSTER PRESENTATIONS

1. Armand H. Matheny Antommara. (2018) "Ethical Issues in the Care of International Patients: A Case Study." International Conference on Clinical Ethics and Consultation, Oxford, United Kingdom.
1. Jill S Sweney, Brad Poss, Colin Grissom, Brent Wallace, and Armand H Matheny Antommara, (2010) "Development of a Statewide Pediatric Pandemic Triage Plan in Utah." Pediatric Academic Societies Annual Meeting, Vancouver, Canada. E-PAS20103713.147.
2. Christopher G. Maloney, Armand H. Matheny Antommara, James F. Bale, Thomas Greene, Jian Ying, Gena Fletcher, and Rajendu Srivastava (2010) "Why Do Pediatric Interns Violate the 30 Hour Work Rule?" Pediatric Academic Societies Annual Meeting, Vancouver, Canada. E-PAS20101500.596
3. Armand H. Matheny Antommara and Edward B. Clark (2007) "Resolving Conflict through Bioethics Mediation." 3rd International Conference on Ethics Consultation and Clinical Ethics, Toronto, Canada.
4. Elizabeth Tyson, Tracy Hill, Armand Antommara, Gena Fletcher, and Flory Nkoy (2007) "Physician Practice Patterns Regarding Nasogastric Feeding Supplementation and Intravenous Fluids in Bronchiolitis Patients." Pediatrics Academic Societies Annual Meeting, Toronto, Canada. E-PAS2007:61300.

ORAL PRESENTATIONS

Keynote/Plenary Lectures

International

1. 2021, *Panelist*, Partnership for Quality Medical Donations, Charitable Access Programming for Rare Diseases, “Ethical Issues,” Webinar, April 6.
2. 2017, *Invited Speaker*, Spina Bifida Fetoscopic Repair Study Group and Consortium, “Ethics of Innovation and Research in Fetal Surgery,” Cincinnati, Ohio, October 26.
3. 2014, *Invited Speaker*, CIC 2013 CCI: Canadian Immunization Conference, “Condition-of-Service Influenza Prevention in Health Care Settings,” Ottawa, Canada, December 2.
4. 2014, *Invited Speaker*, National Conference of the Chinese Pediatric Society, “A Brief Introduction to Pediatric Research and Clinical Ethics,” Chongqing, China, September 12.

National

1. 2020, *Panelist*, Children’s Mercy Bioethics Center, “Ethical Issues in the COVID Pandemic at Children’s Hospitals,” Webinar, March 2.
2. 2019, *Invited Speaker*, North American Fetal Therapy Network (NAFTnet), “Ethics of Innovation,” Chicago, Illinois, October 12.
3. 2019, *Panelist*, National Society of Genetic Counselors Prenatal Special Interest Group, “Fetal Intervention Ethics,” Webinar, September 12.
4. 2017, *Invited Participant*, American College of Epidemiology Annual Meeting, Preconference Workshop, “Extreme Personal Exposure Biomarker Levels: Guidance for Study Investigators,” New Orleans, Louisiana, September 24.
5. 2016, *Invited Speaker*, American Academy of Pediatrics National Conference & Exhibition, Joint Program: Section on Hospital Medicine and Section on Bioethics, “Resource Allocation: Do We Spend Money to Save One Patient with Ebola or Over a 1,000?” San Francisco, California, October 23.
6. 2016, *Invited Speaker*, 26th Annual Specialist Education in Extracorporeal Membrane Oxygenation (SEECHMO) Conference, “Ethical Issues in ECMO: The Bridge to Nowhere,” Cincinnati, Ohio, June 5.
7. 2015, *Invited Speaker*, Extracorporeal Life Support Organization (ELSO) 26th Annual Conference, “ECMO-Supported Donation after Circulatory Death: An Ethical Analysis,” Atlanta, Georgia, September 20.
8. 2014, *Invited Speaker*, Pediatric Evidence-Based Practice 2014 Conference: Evidence Implementation for Changing Models of Pediatric Health Care, “Ethical Issues in Evidence-Based Practice,” Cincinnati, Ohio, September 19.
9. 2014, *Invited Speaker*, 6th Annual David Kline Symposium on Public Philosophy: Exploring the Synergy Between Pediatric Bioethics and Child Rights, “Does Predictive Genetic Testing for Adult Onset Conditions that Are Not Medically Actionable in Childhood Violate Children’s Rights?” Jacksonville, Florida, March 6.

10. 2010, *Invited Speaker*, Quest for Research Excellence: The Intersection of Standards, Culture and Ethics in Childhood Obesity, “Research Integrity and Religious Issues in Childhood Obesity Research,” Denver, Colorado, April 21.
11. 2010, *Invited Speaker*, Symposium on the Future of Rights of Conscience in Health Care: Legal and Ethical Perspectives, J. Reuben Clark Law School at Brigham Young University and the Ave Maria School of Law, “Conscientious Objection in Clinical Practice: Disclosure, Consent, Referral, and Emergency Treatment,” Provo, Utah, February 26.
12. 2009, *Invited Speaker*, Pediatric Organ Donation Summit, “Research Findings Regarding Variations in Pediatric Hospital Donation after Cardiac Death Policies,” Chicago, Illinois, August 18.
13. 2008, *Meet-the-Experts*, American Academy of Pediatrics National Conference & Exhibition, “Physician Refusal to Provide Treatment: What are the ethical issues?” Boston, Massachusetts, October 11.
14. 2008, *Invited Conference Faulty*, Conscience and Clinical Practice: Medical Ethics in the Face of Moral Controversy, The MacLean Center for Clinical Medical Ethics at the University of Chicago, “Defending Positions or Identifying Interests: The Uses of Ethical Argumentation in the Debate over Conscience in Clinical Practice,” Chicago, IL, March 18.
15. 2007, *Symposium Speaker*, Alternative Dispute Resolution Strategies in End-of-Life Decisions, The Ohio State University Mortiz College of Law, “The Representation of Children in Disputes at the End-of-Life,” Columbus, Ohio, January 18.
16. 2005, *Keynote Speaker*, Decisions and Families, *Journal of Law and Family Studies* and The University of Utah S.J. Quinney College of Law, “Jehovah’s Witnesses, Roman Catholicism, and Calvinism: Religion and State Intervention in Parental, Medical Decision-Making,” Salt Lake City, Utah, September 23.

Regional/Local

1. 2023, *Speaker*, Yale Ethics Program, Yale School of Medicine, “Gender-Affirming Care,” New Haven, Connecticut, March 8.
2. 2021, *Panelist*, Pediatric Residency Noon Conference, University of Tennessee Health Science Center, “Bioethics Rounds—Ethical Issues in the Care of Transgender Adolescents,” Memphis, Tennessee, September 21.
3. 2020, *Keynote Speaker*, 53rd Annual Clinical Advances in Pediatrics, “Referral to a Fetal Care Center: How You Can Help Patients’ Mothers Address the Ethical Issues,” Kansas City, Kansas, September 16.
4. 2019, *Speaker*, Patient and Family Support Services, Primary Children’s Hospital, “Ethical Issues in the Care of Trans Adolescents,” Salt Lake City, Utah, December 5.
5. 2019, *Speaker*, Evening Ethics, Program in Medical Ethics and Humanities, University of Utah School of Medicine, “Patients, Parents, and Professionals: Ethical Issues in the Treatment of Trans Adolescents,” Salt Lake City, Utah, December 4.

6. 2019, *Speaker*, Pediatric Hospital Medicine Board Review Course, “Ethics, Legal Issues, and Human Rights including Ethics in Research,” Cincinnati, Ohio, September 8.
7. 2019, *Speaker*, Advances in Fetology, “Evolving Attitudes Toward the Treatment of Children with Trisomies,” Cincinnati, Ohio, September 6.
8. 2019, *Speaker*, Half-Day Ethics Training: Ethics Consultation & Ethics Committees, “Navigating the Rapids of Clinical Ethics Consultation: Intake, Recommendations, and Documentation,” Salt Lake City, Utah, June 1.
9. 2019, *Speaker*, Scientific and Ethical Underpinnings of Gene Transfer/Therapy in Vulnerable Populations: Considerations Supporting Novel Treatments, BioNJ, “What Next? An Ethical analysis of Prioritizing Conditions and Populations for Developing Novel Therapies,” Cranbury, New Jersey, March 7.
10. 2018, *Panelist*, Periviability, 17th Annual Regional Perinatal Summit, Cincinnati, Ohio, October 12.
11. 2018, *Speaker*, Regional Advance Practice Registered Nurse (APRN) Conference, “Adults are Not Large Children: Ethical Issues in Caring for Adults in Children’s Hospitals,” Cincinnati, Ohio, April 26.
12. 2018, *Speaker*, Southern Ohio/Northern Kentucky Sigma Theta Tau International Annual Conference, “Between Hope and Hype: Ethical Issues in Precision Medicine,” Sharonville, Ohio, March 2.
13. 2017, *Speaker*, Advances in Fetology 2017, “Ethics of Innovation and Research: Special Considerations in Fetal Therapy Centers,” Cincinnati, Ohio, October 27.
14. 2016, *Speaker*, End-of-Life Pediatric Palliative Care Regional Conference, “Ethical/Legal Issues in Pediatric Palliative Care,” Cincinnati, Ohio, September 15.
15. 2016, *Speaker*, 26th Annual Bioethics Network of Ohio (BENO) Conference, “When Does Parental Refusal of Medical Treatment for Religious Reasons Constitute Neglect?” Dublin, Ohio, May 29.
16. 2014, *Speaker*, Cincinnati Comprehensive Sickle Cell Center Symposium: Research Ethics of Hydroxyurea Therapy for Sickle Cell Disease During Pregnancy and Lactation, “Ethical Issues in Research with Pregnant and Lactating Women,” Cincinnati, Ohio, October 30.
17. 2014, *Speaker*, Advances in Fetology 2014, “The ‘Miracle Baby’ and Other Cases for Discussion,” Cincinnati, Ohio, September 26.
18. 2014, *Speaker*, Advances in Fetology 2014, “‘Can you tell me ...?’: Achieving Informed Consent Given the Prevalence of Low Health Literacy,” Cincinnati, Ohio, September 26.
19. 2014, *Panelist*, Center for Clinical & Translational Science & Training, Secrets of the Dead: The Ethics of Sharing their Data, Cincinnati, Ohio, August 28.
20. 2014, *Speaker*, Office for Human Research Protections Research Community Forum: Clinical Research ... and All That Regulatory Jazz, “Research Results and Incidental Findings: Do Investigators Have a Duty to Return Results to Participants,” Cincinnati, Ohio, May 21.

21. 2013, *Opening Presentation*, Empirical Bioethics: Emerging Trends for the 21st Century, University of Cincinnati Center for Clinical & Translational Science & Training, “Empirical vs. Normative Ethics: A Comparison of Methods,” Cincinnati, Ohio, February 21.
22. 2012, *Videoconference*, New York State Task Force on Life and the Law, “Pediatric Critical Care Triage,” New York, New York, March 1.
23. 2011, *Presenter*, Fall Faculty Development Workshop, College of Social Work, University of Utah, “Teaching Ethics to Students in the Professions,” Salt Lake City, Utah, November 14.
24. 2011, *Speaker*, 15th Annual Conference, Utah Chapter of the National Association of Pediatric Nurse Practitioners, “Ethical Issues in Pediatric Practice,” Salt Lake City, Utah, September 22.
25. 2011, *Speaker*, Code Silver! Active Shooter in the Hospital, Utah Hospitals & Health Systems Association, Salt Lake City, Utah, March 21.
26. 2009, *Speaker*, Medical Staff Leadership Conference, Intermountain Healthcare, “The Ethics of Leadership,” Park City, Utah, October 30.
27. 2008, *Speaker*, The Art and Medicine of Caring: Supporting Hope for Children and Families, Primary Children’s Medical Center, “Medically Provided Hydration and Nutrition: Ethical Considerations,” Salt Lake City, Utah, February 25.
28. 2005, *Speaker*, Utah NAPNAP (National Association of Pediatric Nurse Practitioners) Chapter Pharmacology and Pediatric Conference, “Immunization Update,” Salt Lake City, Utah, August 18.
29. 2005, *Keynote Speaker*, 17th Annual Conference, Utah Society for Social Work Leadership in Health Care, “Brain Death: Accommodation and Consultation,” Salt Lake City, March 18.
30. 2004, *Continuing Education Presentation*, Utah NAPNAP (National Association of Pediatric Nurse Practitioners), “Febrile Seizures,” Salt Lake City, Utah, April 22.
31. 2004, *Speaker*, Advocacy Workshop for Primary Care Providers, “Ethics of Advocacy,” Park City, Utah, April 3.
32. 2002, *Speaker*, 16th Annual Biologic Basis of Pediatric Practice Symposium, “Stem Cells: Religious Perspectives,” Deer Valley, Utah, September 14.

Meeting Presentations

International

1. 2023, *Speaker*, International Conference on Clinical Ethics and Consultation, “Addressing Ethical and Conceptual Issues in Gender-Affirming Medical Care Outside of the Hospital,” Rome, Italy, June 8.
2. 2018, *Speaker*, International Conference on Clinical Ethics and Consultation, “A Systematic Review of Typologies Used to Characterize Clinical Ethics Consultations,” Oxford, United Kingdom, June 21.

National

1. 2023, Kelsey S. Ryan, Rakhi Gupta Bassuray, Leela Sarathy, Sharon Ostfeld, Armand H. Matheny Antommaria, Erin Rholl, Steven R. Leuthner, and Christy L. Cummings. *Workshop Presenter*, Pediatric Academic Societies Annual Meeting, “How Can Newborn Toxicology Testing be Equitable?” Washington, DC, April 30.
2. 2022, *Speaker*, American Society for Bioethics and Humanities Annual Meeting, “A Mixed Methods Analysis of Requests for Religious Exemptions to a COVID-19 Vaccine Requirement.” Portland, Oregon, October 27.
3. 2022, *Panelist*, American Society for Bioethics and Humanities Annual Meeting, Pediatric Ethics Affinity Group, “When Ethical Healthcare Is Prohibited By Law, How Do We Respond?” Portland, Oregon, October 27.
4. 2022, *Speaker*, APPD/PAS Fellow Core Curriculum Workshop, Pediatric Academic Societies Annual Meeting, “From Idea to Implementation: Navigating the Ethical Landscape of Pediatric Clinical Research,” Denver, Colorado, April 22.
5. 2021, *Panelist*, Pediatric Endocrine Society Annual Meeting, Difference of Sex Development Special Interest Group, Virtual Conference, April 29.
6. 2020, *Speaker*, American Society for Bioethics and Humanities Annual Meeting, “Is This Child Dead? Controversies Regarding the Neurological Criteria for Death,” Virtual Conference, October 17.
7. 2020, *Speaker*, American Society for Bioethics and Humanities Annual Meeting, “Contemporary Ethical Controversy in Fetal Therapy: Innovation, Research, Access, and Justice,” Virtual Conference, October 15.
8. 2020, *Speaker*, American Society for Bioethics and Humanities Annual Meeting, “K-12 Schools and Mandatory Public Health Programs During the COVID-19 Pandemic,” Virtual Conference, October 15.
9. 2019, *Speaker*, American Society for Bioethics and Humanities Annual Meeting, “Ethical Issues in Translating Gene Transfer Studies Involving Children with Neurodegenerative Disorders,” Pittsburgh, Pennsylvania, October 26.
10. 2019, *Moderator*, Pediatric Academic Societies Annual Meeting, Clinical Bioethics, Baltimore, Maryland, April 28.
11. 2018, *Presenter*, American Society for Bioethics and Humanities Annual Meeting, “Looking to the Past, Understanding the Present, and Imaging the Future of Bioethics and Medical Humanities’ Engagement with Transgender Health,” Anaheim, California, October 19.
12. 2018, *Speaker*, American Society for Bioethics and Humanities Annual Meeting, “Should Vaccination Be a Prerequisite for Sold Organ Transplantation?” Anaheim, California, October 18.
13. 2018, Lindsey Douglas, Armand H. Matheny Antommaria, Derek Williams. *Workshop Presenter*, Pediatric Hospital Medicine Annual Meeting, “IRB Approved! Tips and Tricks to Smooth Sailing through the Institutional Review Board (IRB).” Atlanta, Georgia, July 20.

14. 2018, Alan Schroeder, Armand H. Matheny Antommara, Hannah Bassett, Kevin Chi, Shawn Ralston, Rebecca Blankenburg, *Workshop Speaker*, Pediatric Hospital Medicine Annual Meeting, "When You Don't Agree with the Plan: Balancing Diplomacy, Value, and Moral Distress," Atlanta, Georgia, July 20.
15. 2018, Alan Schroeder, Hannah Bassett, Rebecca Blankenburg, Kevin Chi, Shawn Ralston, Armand H. Matheny Antommara, *Workshop Speaker*, Pediatric Academic Societies Annual Meeting, "When You Don't Agree with the Plan: Balancing Diplomacy, Value, and Moral Distress," Toronto, Ontario, Canada, May 7.
16. 2017, *Speaker*, American Society for Bioethics and Humanities Annual Meeting, "Tensions in Informed Consent for Gender Affirming Hormone Therapy and Fertility Preservation in Transgender Adolescents," Kansas City, Missouri, October 19.
17. Lindsey Douglas, Armand H. Matheny Antommara, and Derek Williams. 2017, *Workshop Leader*, PHM[Pediatric Hospital Medicine]2017, "IRB Approved! Tips and Tricks to Smooth Sailing through the Institutional Review Board (IRB) Process," Nashville, Tennessee, July 21.
18. 2016, *Speaker*, American Society for Bioethics and Humanities Annual Meeting, "Ethical Challenges in the Care of International Patients: Organization, Justice, and Cultural Considerations," Washington, DC, October 9.
19. 2015, *Coauthor*, The American Society of Human Genetics Annual Meeting, "Adolescents' Opinions on Disclosure of Non-Actionable Secondary Findings in Whole Exome Sequencing," Baltimore, Maryland, October 9.
20. 2012, *Speaker*, American Society for Bioethics and Humanities Annual Meeting, "A Public Health Ethics Analysis of the Mandatory Immunization of Healthcare Personnel: Minimizing Burdens and Increasing Fairness," Washington, DC, October 21.
21. Armand H. Matheny Antommara, Valerie Gutmann Koch, Susie A. Han, Carrie S. Zoubul. 2012, *Moderator*, American Society for Bioethics and Humanities Annual Meeting, "Representing the Underrepresented in Allocating Scarce Resources in a Public Health Emergency: Ethical and Legal Considerations," Washington, DC, October 21.
22. 2012, *Platform Presentation*, Pediatric Academic Societies Annual Meeting, "Qualitative Analysis of International Variation in Donation after Circulatory Death Policies and Rates," Boston, Massachusetts, April 30. Publication 3150.4.
23. 2011, *Speaker*, American Society for Bioethics and Humanities Annual Meeting, "The Intersection of Policy, Medicine, and Ethics during a Public Health Disaster: Special Considerations for Children and Families," Minneapolis, Minnesota, October 13.
24. Armand H. Matheny Antommara and Joel Frader. 2010, *Workshop Leader*, Pediatric Academic Societies Annual Meeting, "Conscientious Objection in Health Care: Respecting Conscience and Providing Access," Vancouver, British Columbia, Canada. May 1. Session 1710.

25. 2009, *Workshop Leader*, American Society for Bioethics and Humanities Annual Meeting, "Advanced Clinical Ethics Consultation Skills Workshop: Process and Interpersonal Skills," Washington, DC, October 15.
26. 2009, *Platform Presentation*, Pediatric Academic Societies Annual Meeting, "Qualitative Analysis of Donation after Cardiac Death Policies at Children's Hospitals," Baltimore, Maryland, May 2. Publication 2120.6.
27. 2008, *Speaker*, American Society for Bioethics and Humanities Annual Meeting, "Qualitative Analysis of Donation After Cardiac Death (DCD) Policies at Children's Hospitals," Cleveland, Ohio, October 26.
28. 2007, *Participant*, Hamline University School of Law Biennial Symposium on Advanced Issues in Dispute Resolution, "An Intentional Conversation About Conflict Resolution in Health Care," Saint Paul, Minnesota, November 8-10.
29. 2007, *Speaker*, American Society of Bioethics and Humanities Annual Meeting, "Bioethics Consultation and Alternative Dispute Resolution: Opportunities for Collaboration," Washington, DC, October 21.
30. 2007, *Speaker*, American Society of Bioethics and Humanities Annual Meeting, "DNAR Orders in Schools: Collaborations Beyond the Hospital," Washington, DC, October 18.
31. Armand H. Matheny Antommara and Jeannie DePaulis. 2007, *Speaker*, National Association of Children's Hospitals and Related Institutions Annual Meeting, "Using Mediation to Address Conflict and Form Stronger Therapeutic Alliances," San Antonio, Texas, October 9.
32. 2006, *Speaker*, American Society of Bioethics and Humanities Annual Meeting, "Bioethics Mediation: A Critique," Denver, Colorado, October 28.
33. 2005, *Panelist*, American Society of Bioethics and Humanities Annual Meeting, "How I See This Case: 'He Is Not His Brain,'" Washington, DC, October 20.
34. 2005, *Paper Presentation*, Pediatric Ethics: Setting an Agenda for the Future, The Cleveland Clinic, "'He Is Not His Brain:' Accommodating Objections to 'Brain Death,'" Cleveland, Ohio, September 9.
35. 2004, *Speaker*, American Society for Bioethics and Humanities Spring Meeting, "Verification and Balance: Reporting Within the Constraints of Patient Confidentiality," San Antonio, Texas, March 13.
36. 2002, *Panelist*, American Society for Bioethics and Humanities Annual Meeting, "'Who Should Survive?:' Mental Retardation and the History of Bioethics," Baltimore, Maryland, October 24.

Invited/Visiting Professor Presentations

1. 2013, Visiting Professor, "How to Listen, Speak and Think Ethically: A Multidisciplinary Approach," Norton Suburban Hospital and Kosair Children's Hospital, Louisville, Kentucky, May 22.

2. 2010, Visiting Professor, Program in Bioethics and Humanities and Department of Pediatrics, “What to Do When Parents Want Everything Done: ‘Futility’ and Ethics Facilitation,” University of Iowa Carver College of Medicine, Iowa City, Iowa, September 10.

Grand Round Presentations

1. 2019, David Green Lectureship, “Establishing Goals of Care and Ethically Limiting Treatment,” Primary Children’s Hospital, Salt Lake City, Utah, December 5.
2. 2018, “The Ethics of Medical Intervention for Transgender Youth,” El Rio Health, Tucson, Arizona, September 29.
3. 2018, Pediatrics, “Patient Selection, Justice, and Cultural Difference: Ethical Issues in the Care of International Patients,” Cleveland Clinic, Cleveland, Ohio, April 10.
4. 2018, Bioethics, “Reversibility, Fertility, and Conflict: Ethical Issues in the Care of Transgender and Gender Nonconforming Children and Adolescents,” Cleveland Clinic, Cleveland, Ohio, April 9.
5. 2017, Heart Institute, “‘Have you ever thought about what you would want—if god forbid—you became sicker?’: Talking with adult patients about advance directives,” Cincinnati Children’s Hospital Medical Center, Cincinnati, Ohio, October 16.
6. 2017, Pediatrics, “Respectful, Effective Treatment of Jehovah’s Witnesses,” with Judith R. Ragsdale, PhD, MDiv and David Morales, MD, Cincinnati Children’s Hospital Medical Center, Cincinnati, Ohio, March 14.
7. 2017, Pediatrics, “Ethical Dilemmas about Discharging Patients When There Are Disagreements Concerning Safety,” Seattle Children’s Hospital, Seattle, Washington, January 19.
8. 2015, Pediatrics, “‘Nonbeneficial’ Treatment: What must providers offer and what can they withhold?,” Greenville Health System, Greenville, South Carolina, May 10.
9. 2014, Advance Practice Providers, “Common Ethical Issues,” Cincinnati Children’s Hospital Medical Center, Cincinnati, Ohio, August 13.
10. 2014, Respiratory Therapy, “Do-Not-Resuscitate (DNR) Orders,” Cincinnati Children’s Hospital Medical Center, Cincinnati, Ohio, July 15.
11. 2013, Heart Institute, “No Not Months. Twenty-Two *Years*-Old: Transiting Patients to an Adult Model of Care.” Cincinnati Children’s Hospital Medical Center, Cincinnati, Ohio, October 21.
12. 2013, Division of Neonatology, “This Premature Infant Has a *BRCA1* Mutation!?: Ethical Issues in Clinical Whole Exome Sequencing for Neonatologists.” Cincinnati Children’s Hospital Medical Center, Cincinnati, Ohio, October 11.
13. 2013, Department of Pediatrics, “Adults are Not Large Children: Ethical Issues in Caring for Adults in Children’s Hospitals,” Cincinnati Children’s Hospital Medical Center, Cincinnati, Ohio, February 26.
14. 2012, “Mandate or Moratorium?: Persisting Ethical Controversies in Donation after Circulatory Death,” Cedars-Sinai Medical Center, Los Angeles, California, May 16.

15. 2011, Division of Pediatric Neurology Friday Lecture Series, “Inducing or Treating ‘Seizures’ with Placebos: Is It Ever Ethical?,” University of Utah, Salt Lake City, Utah, October 7.
16. 2011, Department of Surgery, “DNR Orders in the OR and other Ethical Issues in Pediatric Surgery: Case Discussions,” Primary Children’s Medical Center, Salt Lake City, Utah, October 3.
17. 2009, Department of Pediatrics, “What to Do When Parents Want Everything Done: ‘Futility’ and Bioethical Mediation,” Primary Children’s Medical Center, Salt Lake City, Utah, September 17.
18. 2008, Division of Pulmonology and Critical Care, “Futility: May Clinicians Ever Unilaterally Withhold or Withdraw Medical Treatment?” Utah Valley Regional Medical Center, Provo, Utah, April 17.
19. 2007, Division of Otolaryngology-Head and Neck Surgery, “Advance Directives, Durable Powers of Attorney for Healthcare, and Do Not Attempt Resuscitation Orders: Oh My!,” University of Utah School of Medicine, Salt Lake City, Utah, June 20.

Outreach Presentations

1. 2019, *Panelist*, Cincinnati Edition, WVXU, “The Ethics of Human Gene Editing,” Cincinnati, Ohio, June 13.
2. 2019, *Speaker*, Adult Forum, Indian Hill Church, “Medical Ethics,” Indian Hill, Ohio, March 24.
3. 2016, *Speaker*, Conversations in Bioethics: The Intersection of Biology, Technology, and Faith, Mt. Washington Presbyterian Church, “Genetic Testing,” Cincinnati, Ohio, October 12.
4. 2008, *Speaker*, Science in Society, Co-sponsored by KCPW and the City Library, “Death—Choices,” Salt Lake City, Utah, November 20.
5. 2003, *Panelist*, Utah Symposium in Science and Literature, “The Goodness Switch: What Happens to Ethics if Behavior is All in Our Brains?” Salt Lake City, Utah, October 10.
6. 2002, *Respondent*, H. Tristram Englehardt, Jr. “The Culture Wars in Bioethics,” Salt Lake Community College, Salt Lake City, Utah, March 29.

Podcasts

1. 2021, “Ethics of COVID Vaccines in Kids,” PHM from Pittsburgh, August 12.
2. 2020, COVID Quandaries: Episode 1, “Is Getting Sick Just Part of the Job?” Hard Call, October 6.

EXHIBIT B

TABLE 1: Level of Evidence Supporting Recommendations in Various Medical Specialties

Specialty	Time Frame	Guidelines N	Recommendations N	Grading System	Level of Evidence		
					High N (%)	Medium N (%)	Low N (%)
Cardiology ¹	9/30/2008	16	2,680	ACA/AHA	314 (11.7)	1,089 (40.6)	1,246 (46.5)
Cardiology ²	2/1/2019	51	6,349	NS	722 (11.4)	2,518 (39.7)	3,069 (48.3)
Endocrinology ³	1995-2011	29	1,762	NS	191 (10.8)	766 (43.5)	804 (45.6)
Infectious Diseases ⁴	7/30/2009	44	4,182	IDSA/USPHS	617 (14.8)	1,240 (29.7)	2,325 (55.5)
Obstetrics and Gynecology ⁵	6/1998-12/2004	55	438	USPSTF	128 (29)	143 (33)	167 (38)
Primary Care ⁶	NS	721	3,251	SORT	576 (18)	1,099 (34)	1,576 (49)

ACC-American College of Cardiology, AHA-American Heart Association, ECS-European Society for Cardiology, IDSA-Infectious Diseases Society of America, NS-Not Specified, SORT-Strength of Recommendations Taxonomy, USPHS-United States Public Health Service, USPSTF-United States Preventative Services Task Force

¹ Tricoci P, Allen JM, Kramer JM, Califf RM, Smith SC, Jr. Scientific evidence underlying the ACC/AHA clinical practice guidelines. *JAMA*. 2009;301(8):831-41.

Level A--evidence from multiple randomized trials or meta-analyses

Level B--evidence from a single randomized trial or nonrandomized studies

Level C--expert opinion, case studies, or standards of care

² Fanaroff AC, Califf RM, Windecker S, Smith SC, Jr., Lopes RD. Levels of evidence supporting American College of Cardiology/American Heart Association and European Society of Cardiology guidelines, 2008-2018. *JAMA*. 2019;321(11):1069-1080.

Level A--multiple RCTs or a single, large RCT

Level B--observational studies or a single RCT

Level C--expert opinion only

³ Hazlehurst JM, Armstrong MJ, Sherlock M, et al. A comparative quality assessment of evidence-based clinical guidelines in endocrinology. *Clin Endocrinol (Oxf)*. 2013;78(2):183-90.

High--well-conducted, randomized, controlled trials and meta-analyses

Moderate--nonrandomized studies (i.e. case series, retrospective cohort studies)

Low--expert opinion

⁴ Khan AR, Khan S, Zimmerman V, Baddour LM, Tleyjeh IM. Quality and strength of evidence of the Infectious Diseases Society of America clinical practice guidelines. *Clin Infect Dis*. 2010;51(10):1147-1156.

I-->= 1 properly randomized controlled trial

II-->= 1 well-designed clinical trial, without randomization, cohort or case-controlled analytic studied (preferably from > 1 center), multiple time series, or dramatic results from uncontrolled experiments

III--opinion of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees

⁵ Chauhan SP, Berghella V, Sanderson M, Magann EF, Morrison JC. American College of Obstetricians and Gynecologists practice bulletins: an overview. *Am J Obstet Gynecol*. 2006;194(6):1564-1572; discussion 1072-5.

Level A--good and consistent scientific evidence,

Level B--limited or inconsistent scientific evidence,

Level C--consensus and expert opinion.

⁶ Ebell MH, Sokol R, Lee A, Simons C, Early J. How good is the evidence to support primary care practice? *Evid Based Med*. Jun 2017;22(3):88-92.

A--consistent and good quality patient-oriented evidence

B--inconsistent or limited quality patient-oriented evidence

C--consensus, usual practice, opinion, disease-oriented evidence, or case series

Good Quality--validated clinical decision rules, meta-analyses of high-quality studies and high-quality individual cohort studies for diagnosis; meta-analyses of randomized controlled trials, high-quality individual randomized controlled trials, and all or none studies for treatment and prevention; and meta-analyses of good quality cohort studies and individual cohort studies with good follow-up for prognosis